

INFORMATION DISCLOSURE CITATION

Applicant: Kui-Chiu KWOK

Title: "Meltblowing Method and Apparatus"

Serial No.:

Group: 1732

Filing Date: 18 March 2000

L. Tentoni

 J6530 U.S. PTO
 09/528357
 03/18/00

U.S. PATENTS & APPLICATIONS

Initial *		Document Number							Date	Inventors	Class	Filing D.
180	AA	R	E	3	3	4	8	1	11 Dec 90	Zeicker et al.		
	AB	2	2	1	2	4	4	8	20 Aug 40	Modigliani		
	AC	2	2	9	7	7	2	6	2 Apr 42	Stephanoff		
	AD	2	6	2	8	3	8	6	17 Feb 53	Tornberg		
	AE	3	2	1	3	1	7	0	19 Oct 65	Erdmenger et al.		
	AF	3	3	3	4	7	9	2	8 Aug 67	DeVries et al.		
	AG	3	4	8	8	8	0	6	13 Jan 70	De Cecco et al.		
	AH	3	6	5	0	8	6	6	21 Mar 72	Prentice		
	AI	3	7	0	4	1	9	8	28 Nov 72	Prentice		
	AJ	3	7	5	5	5	2	7	28 Aug 73	Keller et al.		
	AK	3	8	2	5	3	7	9	23 Jul 74	Lohkamp et al.		
	AL	3	8	4	9	2	4	1	19 Nov 74	Butin et al.		
	AM	3	8	6	1	8	5	0	21 Jan 75	Wallis		
	AN	3	8	7	4	8	8	6	1 Apr 75	Levecque et al.		
	AO	3	9	2	0	3	6	2	18 Nov 75	Bradt		
	AP	3	9	4	2	7	2	3	9 Mar 76	Langdon		
	AQ	3	9	4	7	5	3	7	30 Mar 76	Buntin et al.		
	AR	3	9	7	0	4	1	7	20 Jul 76	Page		
	AS	3	9	7	8	1	8	5	31 Aug 76	Buntin et al.		
	AT	4	0	1	5	9	6	3	5 Apr 77	Levecque et al.		
	AU	4	0	1	5	9	6	4	5 Apr 77	Levecque et al.		
	AV	4	0	5	0	8	6	6	27 Sep 77	Kilsdonk		
	AW	4	0	5	2	1	8	3	4 Oct 77	Levecque et al.		
	AX	4	1	0	0	3	2	4	11 Jul 78	Anderson et al.		
	AY	4	1	4	5	1	7	3	20 Mar 79	Pelzer et al.		
✓	AZ	4	1	8	9	4	5	5	19 Feb 80	Raganato et al.		

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Joseph Sidul Ste

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U.S. PATENTS & APPLICATIONS

Initial *		Document Number							Date	Inventors	Class	Filing Date
820	AA	4	2	7	7	4	3	6	7 Jul 81	Shah et al.		
	AB	4	3	0	0	8	7	6	17 Nov 81	Kane et al.		
	AC	4	3	4	0	5	6	3	20 Jul 82	Appel et al.		
	AD	4	3	5	9	4	4	5	16 Nov 82	Kane et al.		
	AE	4	3	8	0	5	7	0	19 Apr 83	Schwarz		
	AF	4	5	2	6	7	3	3	2 Jul 85	Lau		
	AG	4	6	4	5	4	4	4	24 Feb 87	Lenk et al.		
	AH	4	7	0	8	6	1	9	24 Nov 87	Balk		
	AI	4	7	8	5	9	9	6	22 Nov 88	Ziecker et al.		
	AJ	4	8	1	8	4	6	3	4 Apr 89	Buehning		
	AK	4	8	1	8	4	6	4	4 Apr 89	Lau		
	AL	4	8	8	9	4	7	6	26 Dec 89	Buehning		
	AM	4	9	2	3	7	0	6	8 May 90	Binley et al.		
	AN	4	9	8	3	1	0	9	8 Jan 91	Miller et al.		
	AO	4	8	7	4	4	5	1	17 Oct 89	Boger et al.		
	AP	5	0	6	6	4	3	5	19 Nov 91	Lorenz et al.		
	AQ	5	0	9	8	6	3	6	24 Mar 92	Balk		
	AR	5	1	4	5	6	8	9	8 Sep 92	Allen et al.		
	AS	5	1	6	5	9	4	0	24 Nov 92	Windley		
	AT	5	2	6	9	6	7	0	14 Dec 93	Allen et al.		
	AU	5	4	2	1	9	2	1	6 Jun 95	Gill et al.		
	AV	5	4	4	5	5	0	9	29 Aug 95	Allen et al.		
	AW	5	4	5	8	7	2	1	17 Oct 95	Rateman		
	AX	5	4	5	8	2	9	1	17 Oct 95	Brusko et al.		
	AY	5	4	7	8	2	2	4	26 Dec 95	McGuffey		
✓	AZ	5	5	4	0	8	0	4	30 Jul 96	Rateman		

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Joseph S Del Sole

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U.S. PATENTS & APPLICATIONS

Initial		Document Number							Date	Inventor	Class	Filing Date
YD	AA	R	E	3	3	1	5	8	6 Feb 90	Stouffer et al.		
	AB	R	E	3	3	1	5	9	6 Feb 90	Bauer		
	AC	R	E	3	3	4	4	8	20 Nov 90	Bauer		
	AD	R	E	3	3	6	0	5	4 Jun 91	Bauer		
	AE	4	0	0	7	6	2	5	15 Feb 77	Houben et al.		
	AF	4	0	5	2	0	0	2	4 Oct 77	Stouffer et al.		
	AG	4	1	5	1	9	5	5	1 May 79	Stouffer		
	AH	4	5	9	6	3	6	4	24 Jun 86	Bauer		
	AI	4	6	9	4	9	9	2	22 Sep 87	Stouffer		
	AL	4	9	0	5	9	0	9	6 Mar 90	Woods		
		4	9	5	5	5	4	7	11 Sep 90	Woods		
		5	0	3	5	3	6	1	30 Jul 91	Stouffer		
V		5	1	2	9	5	8	5	14 Jul 92	Bauer		

FOREIGN PATENTS & PUBLICATIONS

		Document Number							Date	Country	Class	Translation Yes No	
	AM	7	5	6	9	0	7		12 Sep 56	Great Britain			
	AN	1	3	9	2	6	6	7	30 Apr 75	Great Britain			
	AO	W	9	1	5	8	9	5	19 Aug 93	PCT			
	O	3											

OTHER DOCUMENTS (Author, Title, Date and Pages)

AR	Nonwovens World Magazine, "Meltblown Technology Today", 1989, pages 1-158.											
AS	The New Non-Wovens World, "Developments in Melt Blowing Technology", Summer 1993, pages 73-82.											
AT												

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U.S. PATENTS & APPLICATIONS

Initial *		Document Number							Date	Inventor	Class	Filing Date
<i>SD</i>	AA	5	0	6	9	8	5	3	3 Dec 91	Miller		
<i>SD</i>	AB	5	0	9	4	7	9	2	10 Mar 92	Baran		
<i>SD</i>	AC	5	2	6	0	0	0	3	9 Nov 93	Nyssen et al.		
<i>SD</i>	AD	5	4	2	1	9	2	1	6 Jun 95	Gill et al.		
<i>SD</i>	AE	5	5	0	3	7	8	4	2 Apr 96	Balk		
<i>SD</i>	AF	5	6	7	9	3	7	9	21 Oct 97	Fabbicante et al.		
	AG											
	AH											
	AI											
	AL											

FOREIGN PATENTS & PUBLICATIONS

		Document Number							Date	Country	Class	Translation Yes No	
	AM	4	4	1	6	1	6	8	Jul 69	Japan			
	AN												
	AO												
	AP												
	AQ												

OTHER DOCUMENTS (Author, Title, Date and Pages)

<i>SD</i>	AR	Gregory F. Ward, "Micro-Denier Nonwoven Process and Fabrics", on or about 17 Oct 97, pgs. 1-9.										
	AS											
	AT											

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U.S. PATENTS & APPLICATIONS

Initial *		Document Number							Date	Inventors	Class	Filing Date
1989	AA	2	0	3	1	3	8	7	30 Nov 34	Schwarz		
	AB	3	0	3	8	2	0	2	12 Jun 62	Harkenrider		
	AC	3	1	7	6	3	4	5	6 Apr 65	Powell		
	AD	3	1	7	8	7	7	0	20 Apr 65	Willis		
	AE	3	1	9	2	5	6	2	6 Jul 65	Powell		
	AF	3	1	9	2	5	6	3	6 Jul 65	Crompton		
	AG	3	2	0	4	2	9	0	7 Sep 65	Crompton		
	AH	3	2	5	3	3	0	1	31 May 66	McGlaughlin		
	AI	3	3	8	0	1	2	8	30 Apr 68	Cremer et al.		
	AJ	3	4	9	2	6	9	2	3 Feb 70	Soda et al.		
	AK	3	5	0	1	8	0	5	24 Mar 70	Douglas, Jr. et al.		
	AL	3	6	1	3	1	7	0	19 Oct 71	Soda et al.		
	AM	3	9	2	3	4	4	4	2 Dec 75	Esper et al.		
	AN	3	9	8	1	6	5	0	21 Sep 76	Page		
	AO	4	1	8	5	9	8	1	29 Jan 80	Ohsato et al.		
	AP	4	4	5	7	6	8	5	3 Jul 84	Huang et al.		
	AQ	4	6	5	2	2	2	5	24 Mar 87	Dehennau et al.		
	AR	4	7	4	6	2	8	3	24 May 88	Hobson		
	AS	4	7	4	7	9	8	6	31 May 88	Chao		
	AT	4	8	1	2	2	7	6	14 Mar 89	Chao		
	AU	4	8	1	8	4	6	4	4 Apr 89	Lau		
1990	AV	5	0	1	3	2	3	2	7 May 91	Way		
1990	AW	5	0	6	7	8	8	5	26 Nov 91	Stevenson et al.		

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U.S. PATENTS & APPLICATIONS

Initial *		Document Number							Date	Inventor	Class	Filing Date
YSD	AA	4	9	4	9	6	6	8	21 Aug 91	Heindel et al.		
	AB	4	9	8	3	1	0	9	8 Jan 91	Miller et al.		
	AC	5	0	1	7	1	1	6	21 May 91	Carter et al.		
	AD	5	1	4	5	6	8	9	8 Sep 92	Allen et al.		
	AE	5	2	6	9	6	7	0	14 Dec 93	Allen et al.		
	AF	5	3	4	2	6	4	7	30 Aug 94	Heindel et al.		
	AG	5	3	5	4	3	7	8	11 Oct 94	Hauser et al.		
	AH	5	4	0	9	7	3	3	25 Apr 95	Boger et al.		
	AI	5	4	1	8	0	0	9	23 May 95	Rateman et al.		
	AJ	5	4	2	1	9	4	1	6 Jun 95	Allen et al.		
	AK	5	4	2	3	9	3	5	13 Jun 95	Benecke et al.		
	AL	5	4	2	9	8	4	0	4 Jul 95	Rateman et al.		
	AM	5	4	4	5	5	0	9	29 Aug 95	Allen et al.		
	AN	5	5	2	4	8	2	8	11 Jun 96	Rateman et al.		
	AO	5	5	3	3	6	7	5	9 Jul 96	Benecke et al.		
	AP	5	6	0	5	7	0	6	25 Feb 97	Allen et al.		
V	AQ	5	6	2	0	1	3	9	15 Apr 97	Ziecker		

FOREIGN PATENTS & PUBLICATIONS

		Document Number							Date	Country	Class	Translation Yes No	
	AR												

OTHER DOCUMENTS (Author, Title, Date and Pages)

	AS	
EXAMINER:	Joseph S. D. C. Sole	
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Art Unit 1732

U.S. PATENTS & APPLICATIONS

Initial		Document Number							Date	Inventor	Class	Filing Date
J20	AA	3	8	8	8	6	1	0	10 Jun 75	Brackmann et al		
	AB	4	8	2	6	4	1	5	2 May 89	Mende		
	AC	5	1	1	4	7	5	2	19 May 92	Hall		
	AD	5	4	0	7	6	1	9	18 Apr 95	Maeda et al.		
	AE	5	6	1	8	3	4	7	8 Apr 97	Clare et al.		
	AF	5	6	1	8	5	6	6	8 Apr 97	Allen et al.		
	AG	5	6	2	0	1	3	9	15 Apr 97	Zeicker et al.		
	AH	5	9	0	2	5	4	0	11 May 99	Kwok		
	AI	5	9	0	4	2	9	8	18 May 99	Kwok et al.		
	AJ	0	2	5	3	3	1	1		Kwok		20 Feb 99
		9										

OTHER DOCUMENTS (Author, Title, Date and Pages)

J20	AK	Edward J. McNally et al., J&M Laboratories, "Durafiber/Durastitch Adhesives Applications Method featuring Solid State Application Technology" disclosed 8 September 1997 at Inda-Tec 97 Meeting, Cambridge MA, pgs. 26.1-26.8.
B2	AL	Scott R. Miller, Beyond Meltblowing: Process Refinement in Microfibre Hot melt adhesive Technology, Edana 1998 International Nonwovens Symposium, 11 pgs.
J20	AM	Rajiv S. Rao et al., "Vibration and Stability in the Melt Blowing Process", Ind. Eng. Chem. Res., 1993, 32, 3100-3111.

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SUPPLEMENTAL
INFORMATION
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CITATION

APR 06 2000

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Art Unit: 1732

U.S. PATENTS & APPLICATIONS

Initial *		Document Number							Date	Inventor	Class	Filing Date
JS	AA	3	8	0	6	2	8	9	1974	Schwarz		
JS	AB	3	9	5	4	3	6	1	1976	Page		
JS	AC	5	4	7	6	6	1	6	Dec. 1995	Schwarz		
	AD											
	AE											
	AF											
	AG											
	AH											
	AI											
	AJ											
	AK											

FOREIGN PATENTS & PUBLICATIONS

		Document Number							Date	Country	Class	Translation Yes No	
JS	AL	W	0	9	2	0	7	1	2	2	1992	WIPO Publication	
	AM												
	AN												
	AO												
	AP												

OTHER DOCUMENTS (Author, Title, Date and Pages)

	AQ	
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**SECOND
SUPPLEMENTAL
INFORMATION
DISCLOSURE
CITATION**

Applicant: KWOK

Title: "Meltblowing Method And Apparatus"

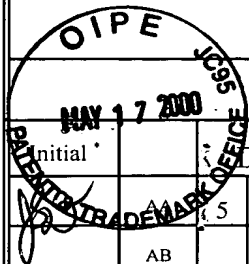
Appl. No.: 09/528,357

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Art Unit: 1732

U.S. PATENTS & APPLICATIONS



Initial	Document Number	Date	Inventor	Class	Filing Date
AB	5 3 1 2 5 0 0	1994	Kurihara et al.		
AC					
AD					
AE					
AF					
AG					
AH					
AI					
AJ					
AK					

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FOREIGN PATENTS & PUBLICATIONS

	Document Number	Date	Country	Class	Translation Yes No
AL	1 97 1 5 7 4 0	1998	Germany		
AM					
AN					
AO					
AP					

OTHER DOCUMENTS (Author, Title, Date and Pages)

AQ	
AR	
AS	

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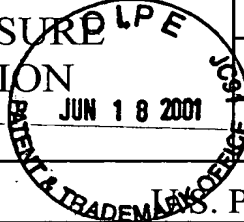
Title: "Meltblowing Method And Apparatus"

Appl. No.: 09/528,357

Examiner L. Antoni

Filing Date: 18-March-2000

Art Unit 1754



U.S. PATENTS & APPLICATIONS

Initial *		Document Number							Date	Inventor	Class	Filing Date
130	AA	6	2	3	5	1	3	7	May 2001	Van Eperen et al.		22 Aug 1998
132	AB	5	9	6	4	9	7	3	1999	Heath		
133	AC	5	2	7	5	6	7	6	1994	Rooyakkers et al.		
134		4	9	6	0	6	1	9	1990	Slautterback et al.		
135	AD	4	8	4	4	0	0	3	1989	Slautterback et al.		
136	AE	4	8	4	2	6	6	6	1989	Werenicz		
137	AF	4	7	1	1	6	8	3	1987	Merkatoris		
	AG											
	AH											
	AI											
	AL											

FOREIGN PATENTS & PUBLICATIONS

		Document Number							Date	Country	Class	Translation Yes No	
	AM												
	AN												
	AO												
	AP												
	AQ												

OTHER DOCUMENTS (Author, Title, Date and Pages)

138	AR	Today's Idea, "Nordson Unveils Diaper Elastic System", October 1988, 1 pg.										
139	AS	Nordson, "Adhesive And Powder Application Systems For the Non-Wovens Industry", 1992, 7 pgs.										
	AT											

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